**DYNAMICS OF ATMOSPHERES AND OCEANS**
LABORATORY EXPERIMENTS IN PHYSICAL OCEANOGRAPHY
**SPECIAL ISSUE**

**Part A**

*Contents* ..... vii

Foreword ..... 1

*Research Papers*
**Currents**
Laboratory simulation of the ocean currents in the Barents Sea
T.A. McClimans and J.H. Nilsen ..... 3
Gyre formation at a corner by rotating barotropic coastal flows along a slope
B.A. Klinger ..... 27
Propagation of barotropic dipoles over topography in a rotating tank
R.C. Kloosterziel, G.F. Carnevale and D. Philippe ..... 65
Barotropic flow over bottom topography—experiments and nonlinear theory
R.L. Pfeffer, R. Kung, W. Ding and G.-Q. Li ..... 101
Rectified flow along a vertical coastline
X. Zhang, D.L. Boyer, G.C. d'Hières, D. Aelbrecht and H. Didelle ..... 115

**Mixing in stratified fluids/internal waves**
An experimental investigation of vertical mixing in two-layer density-stratified shear flows
G.D. Sullivan and E.J. List ..... 147
Measurements of turbulence and fossil turbulence near Ampere seamount
C.H. Gibson, V. Nabatov and R. Ozmidov ..... 175
Two experimental studies of internal waves generated by tide–topography interaction
D.P. Renouard and J.-M. Baey ..... 205
Turbulence and mixing in the boundary layer generated by shoaling internal waves
J.R. Taylor ..... 233
Experimental study of the effects of grid configuration on the dynamical evolution of decaying turbulence in a stably stratified fluid
S.T. Thoroddsen and C.W. van Atta ..... 259
Experimental studies of the development of quasi-two-dimensional turbulence in stably stratified fluid
C.T. Yap and C.W. van Atta ..... 289
Simulation and stability of two-dimensional internal gravity waves in a stratified shear flow
C.-L. Lin, J.H. Ferziger, J.R. Koseff and S.G. Monismith ..... 325
Interaction of a negatively buoyant line plume with a density interface
C.Y. Ching, H.J.S. Fernando and Y. Noh ..... 367
Development of convection in a rotating fluid: scales and patterns of motion
D. Brickman and D.E. Kelley ..... 389

**Part B: companion volume 20 (1–2)**

*Research Papers*
**Ocean surface waves**
Spatial measurements of short wind waves using a scanning slope sensor
P.A. Hwang, D.B. Trizna and J. Wu ..... 1
Bubble size distribution under saltwater and freshwater breaking waves
J.W. Cartmill and M.Y. Su ..... 25
Ultra-wideband radar studies of steep crested waves with scanning laser measurements of wave slope profiles
D.B. Trizna, J.P. Hansen, P. Hwang and J. Wu ..... 33
A 2-D complex wavelet analysis of an unsteady wind-generated surface wave field
G.R. Spedding, F.K. Browand, N.E. Huang and S.R. Long ..... 155

**Instabilities/turbulence/shear layers**

Blocking and trapping of waves in an inhomogeneous flow
S.R. Long, R.J. Lai, N.E. Huang, G.R. Spedding ..... 79
The development of mushroom-like vortices from shear flow instabilities
D. Etling, D. Hansen and R. Jürrens ..... 107
Rayleigh–Taylor instability: experiments with image analysis
S.B. Dalziel ..... 127
Application of optical techniques to the study of plumes in stratified fluids
A.J. Ferrier, D.R. Funk and P.J.W. Roberts ..... 155
Stationary bottom generated velocity fluctuations in one-dimensional open channel flow
B. de Jong ..... 185